University of Wisconsin
Department of Genetics
Madison, Wis.

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Dear Weibull:

I am sure you could not have found your recent visit nearly as profitable as we did. I was very happy at the opportunity to meet you personally.

Do you recall our discussing Sertic's observation on the acriflavine agglutination of Salmonella phase-2? I asked Bernsteinto check up on this, and thought you would be interested at the result.

Like his other reports, this observation of Sertic is absolutely correct. A number of diphasic strains were studied, and these invariably agglutinated in phase-2 and not in phase-1 (unless they were rough, of course, as verified by other tests). The reaction goes very well in tubes, and there closely resembles the H-agglutination by antiserum. In addition, the reaction is abolished by heating (the rough reaction is thermostable), just as the serum agglutination.

The strains tested included S. wien (b: lw() and S. dar-es-salaam (lw: en..) The lw phase of wien agglutinated, the ph1 lw of dar-es-salaam did not. We are now studying the anomalous ph 1 1,2.. of S. java, CDC-157, with results not entirely consistent. Otherwise, however, it seems to be generally true that second-phase flagella are agglutinable.

We have no indication as yet of the chemical basis of this difference, though one would suspect that it might be based on a lower iso-electric point of the flagellar protein of the ph2. In agreement with this, bacteria that had been treated with formalin (presumably neutralizing free $-NH_2$) agglutinated in either phase. We have in mind some further tests of a fairly crude sort-- agglutination at different pH's with different dyes, and microscopic cataphoresis of the whole bacteria before considering more direct chemical studies. Meanwhile, I venture to predict that if Sven Gard and yourself had observed an electrophoretic difference between ph1 and ph2 of S, paratyphi B it was that ph1 had a higher IEP (i.e. probably a lower mobility at neutral pH). I look forward to your comment in reply.

At any rate, it may ultimately become rather more pertinent to compare the amino acid compositions of the flagella, especially for the more basic and acidic amino acids. I am still hopeful that you might consent to do this as an extension of your previous work, most usefully on a Salmonella strain that is also being studied genetically.

Yours sincerely,

Joshua Lederberg

P.S. Did you perhaps leave behind the copy of "Papers in Microbial Genetics" that you purchased while here? If so, I will hasten to mail it on to you.